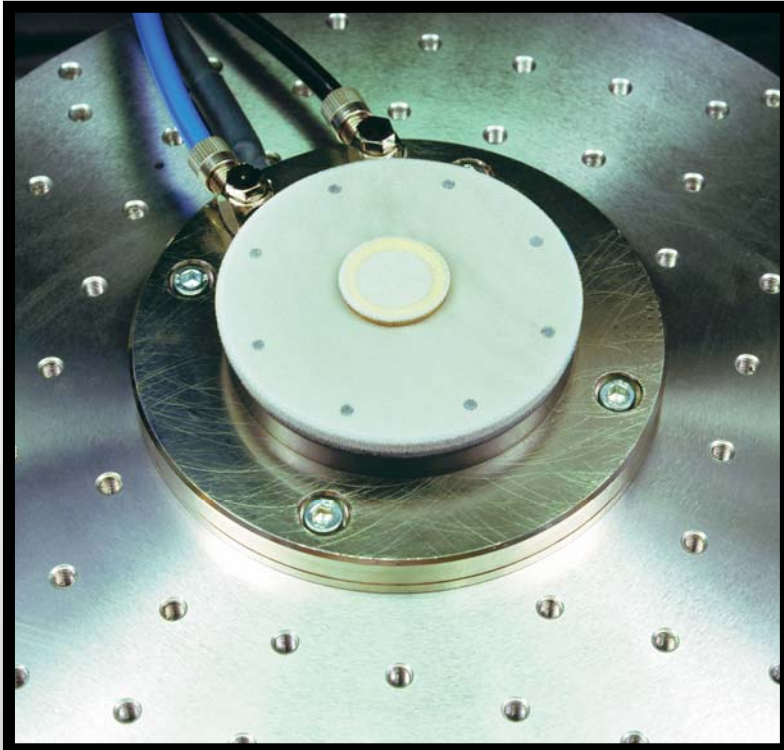
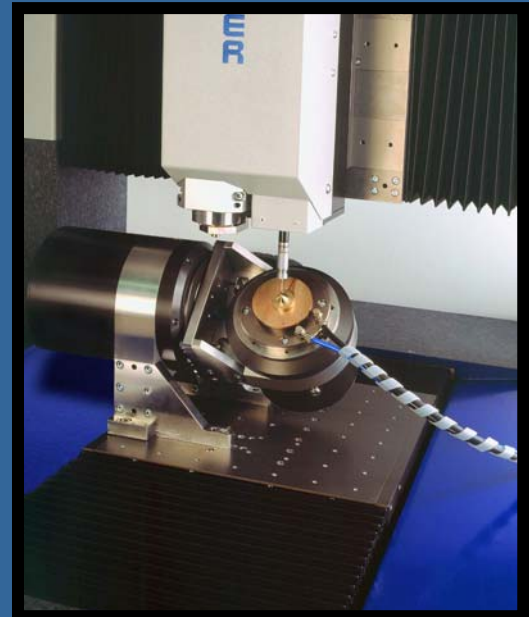


Thermo Chuck Thermo Chuck



Thermo Chuck

*The cool way
of clamping*

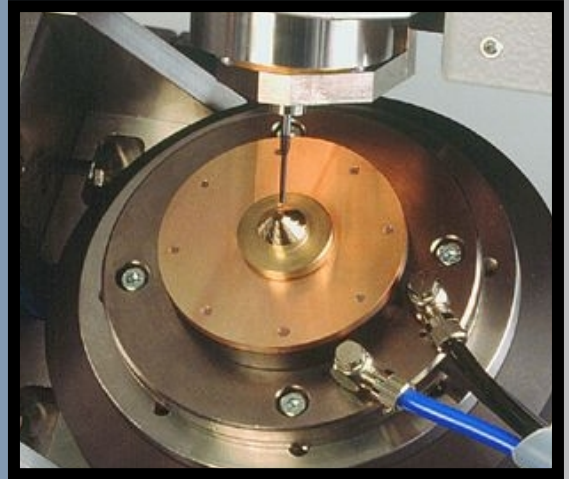
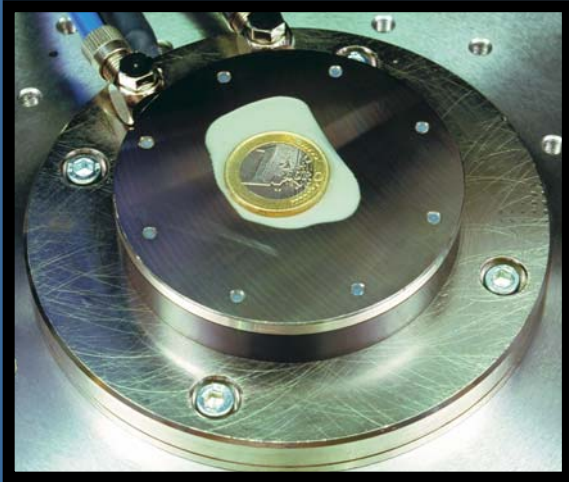


LAUNCH-MICRO IP
Contract n° 011795

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WHAT IS IT? ... FUNCTIONALITY

The Kugler Thermo Chuck is a clamping device that enables to clamp workpieces without high clamping forces. The principle of fixation is that of form closure by embedding the workpiece into a small layer of ice (freezing chuck) or into a small layer of low melting material like wax or paraffin (heating chuck).



WHY TO USE IT? ... ADVANTAGES

The KUGLER Thermo Chuck provides the capability of clamping thin walled and fragile workpieces virtually without clamping forces. Additionally it is possible to embed the workpiece and therefore to sustain parts that tend to move or be deformed by process forces.

Furthermore the clamping can be done by the use of water, thus no cleaning agents like acetone or alcohol are necessary.

Other low melting substances like waxes or paraffin are also usable for clamping and embedding of the workpiece.

The chuck can be heated from -10°C to approx $+90^{\circ}\text{C}$ within 10 minutes and it can also be cooled down from 90°C to -10°C in the same time.

HOW DOES IT WORK? ... DESCRIPTION

The Thermo Chuck is used for clamping workpieces by embedding the workpiece in wax or ice. For this the Thermo Chuck can be heated up to more than 80°C and it can be cooled below 0°C . The chuck itself is connected to the control unit by one electrical cable that is needed to control the Peltier element in the Thermo Chuck and two water hoses that provide a water cooling of the Peltier element. Additionally four thermo sensors are placed in the chuck so the control unit can display the actual temperature of the chuck. The base of the chuck is thermalized to a constant temperature by the water circuit.

The water cooling circuit of the device is closed and the control unit contains a small pump to enforce a circulation in the water circuit. A heat exchanger and a water container are also included into the control unit.

APPLICATIONS

The Thermo Chuck is used for the clamping of fragile workpieces for micro laser machining and micro milling. The possibility of embedding allows the clamping of structures that can not be clamped any other way.